CLAIMS

1. A lift boat, comprising:

a) a hull having a stern, a bow with a forward rake portion and a hull periphery;

b) a plurality of legs movably attached to the hull including a pair of forward legs positioned next to the bow and an aft leg positioned next to the stern, each leg being movable between lowered and raised positions;

c) a powered jacking mechanism for elevating and lowering each leg relative to the hull;

d) a plurality of pads, one pad attached to each leg;

e) port and starboard recesses in the hull that extend to the forward rake portion for receiving the pads when the lift boat is underway and the legs are in the raised position; and

f) a propulsion unit that includes powered propellers positioned at spaced apart positions and on opposite sides of the aft leg.

2. The lift boat of claim 1, wherein the lift boat has a deck surface area which is next to the top of the hull and wherein the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is at least 30% of the deck surface area.

3. The lift boat of claim 2, wherein each pad has about the same surface area as every other pad.

4. The lift boat of claim 1, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads having a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is large enough such that, when the boat is loaded to capacity and is jacked up, the pads exert pressure of less than about 7 p.s.i. on the sea floor.

5. The lift boat of claim 4, wherein each pad has about the same surface area as every other pad.

6. The lift boat of claim 1, wherein the hull has port and starboard side portions and a part of each pad extends laterally to a position that is beyond a hull side portion.

7. The lift boat of claim 1 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

8. The lift boat of claim 1 wherein the pads are buoyant.

9. The lift boat of claim 1 wherein the pads supplement the aggregate buoyancy of the hull when underway.

10. A lift boat comprising:

a) a hull having a hull periphery, bow and stern portions, port and starboard portions, and the bow portion including a forward rake portion;

b) a plurality of legs connected to the hull;

c) a plurality of pads, one pad attached to each leg;

d) jacking mechanisms on the hull for moving the legs relative to the hull between raised and lowered positions; and

e) recesses in the hull for receiving the pads when the lift boat is underway, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is equal to at least 30% of the surface area of the deck of the lift boat;

f) wherein the pads include a port and starboard pads that are spaced apart from each other, each said port and starboard pad extending to and extending behind the forward rake portion;

g) wherein parts of the port pad and starboard pads extend laterally beyond the hull periphery.

11. The lift boat of claim 10, wherein each pad has about the same surface area as every other pad.

12. The lift boat of claim 10, wherein the total bottom surface area of the pads is large enough such that, when the boat is loaded to capacity and is jacked up, the pads exert pressure of less than about 7 p.s.i. on the sea floor.

13. The lift boat of claim 12, wherein each pad has about the same surface area as every other pad.

14. The lift boat of claim 10, wherein the pads are partially recessed into the hull and extend laterally outward from the hull when the boat is underway.

15. The lift boat of claim 10 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

16. The lift boat of claim 10 wherein the pads are buoyant.

17. The lift boat of claim 10 wherein the pads supplement the aggregate buoyancy of the hull when underway.

18. A lift boat comprising:

a) a hull having a hull periphery, a deck surface, port and starboard sides, bow and stern portions, and a hull bottom, each said port and starboard side extending generally between the deck and bottom, the bow portion having a rake portion;

b) a plurality of three legs movably attached to the hull including a pair of forward legs next to the forward rake portion and a single aft leg positioned next to the stern;

c) each leg having a jacking mechanism for moving the leg upward and downward relative to the hull; and

d) a plurality of pads, one pad attached to each leg;

e) a plurality of recesses in the hull for receiving the pads when the lift boat is underway, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, at least two of the pads extending laterally beyond the hull periphery;

f) wherein the recesses include a pair of forward recesses that extend to the forward rake portion longitudinally and beyond the hull periphery laterally at a position next to the forward rake portion; and

g) a propulsion system that includes dual, spaced apart powered propellers positioned on opposite sides of the aft leg.

19. The lift boat of claim 18, wherein each pad has about the same surface area as every other pad.

20. The lift boat of claim 18, wherein the pads are partially recessed into the hull and extend laterally outward from the hull when the boat is underway.

21. The lift boat of claim 20 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

22. The lift boat of claim 20 wherein the pads are buoyant.

23. The lift boat of claim 20 wherein the pads supplement the aggregate buoyancy of the hull when underway.

24. A lift boat comprising:

a) a hull having port and starboard side panels, each having a vertically extending opening;

b) a plurality of three legs attached to the hull including a pair of forward legs and a single aft leg;

c) a plurality of pads, one pad attached to each leg;

d) each leg having a jacking mechanism that powers a leg to move between raised and lowered positions; and

e) recesses in the hull for receiving the pads when the lift boat is underway, wherein one of the pads extends laterally outward from the starboard side of the hull at the opening when the legs are in the raised position, and one of the pads extends laterally outward from the port side of the hull;

f) a propulsion system that includes a propeller that is spaced laterally from the aft leg.

25. The lift boat of claim 24, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is at least 30% of the surface area of the deck of the lift boat.

26. The lift boat of claim 24, wherein each pad has about the same surface area as every other pad.

27. The lift boat of claim 24, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is large enough such that, when the boat is loaded to capacity and is jacked up, the pads exert pressure of less than 7 p.s.i. on the sea floor.

28. The lift boat of claim 27, wherein each pad has about the same surface area as every other pad.

29. The lift boat of claim 28, wherein the pads are buoyant in salt water.

30. The lift boat of claim 24 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

31. The lift boat of claim 24 wherein the pads are buoyant.

32. The lift boat of claim 24 wherein the pads supplement the aggregate

buoyancy of the hull when underway.

33. A lift boat comprising:

a) a self-propelled hull having a deck surface, port and starboard sides, bow and stern portions, a hull periphery and a hull bottom, each said port and starboard side extending generally between the deck and bottom, the bow portion having a rake portion;

b) a plurality of legs movably attached to the hull;

c) each leg having a jacking mechanism for moving the leg upward and downward relative to the hull; and

d) a plurality of pads, one pad attached to each leg;

e) a plurality of recesses in the hull for receiving the pads when the lift boat is underway, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, at least two of the pads extending laterally of the deck surface area; and

f) wherein two of the recesses include an opening in one of the sides through which a pad extends beyond the hull periphery during use when the boat is underway and the legs are in the up position.

34. The lift boat of claim 33, wherein each pad has about the same surface area as every other pad.

35. The lift boat of claim 33, wherein the pads are partially recessed into the hull and extend laterally outward from the hull when the boat is underway.

36. The lift boat of claim 35 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

37. The lift boat of claim 35 wherein the pads are buoyant.

38. The lift boat of claim 35 wherein the pads supplement the aggregate buoyancy of the hull when underway.

39. A lift boat comprising:

a) a self-propelled hull having a bow, a stern, and port and starboard side panels, a hull periphery, and each side panel having a vertically extending opening;

b) a plurality of legs including at least one leg next to the stern and two legs next to the bow including a port leg and a starboard leg, each of the legs being movable relative to the hull between "up" and "down" positions;

c) a plurality of pads, one pad attached to each leg;

d) each leg having a jacking mechanism that powers a leg upward and downward between "up" and "down" positions;

e) a plurality of recesses in the hull for receiving the pads when the lift boat is underway, wherein one of the pads extends laterally beyond the starboard side panel and hull periphery at a vertically extending opening when the boat is underway, and one of the pads extends laterally beyond the port side and hull periphery at one of the vertically extending openings when the boat is underway; and

f) wherein each of the port and starboard bow recesses has front openings that communicate with the side openings and a part of the hull extends over a part of each port and starboard pad.

40. The lift boat of claim 39, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is at least 30% of the surface area of the deck of the lift boat

41. The lift boat of claim 39, wherein each pad has about the same surface area as every other pad.

42. The lift boat of claim 39, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is large enough such that the pads exert pressure of less than 7 p.s.i. on the sea floor during use.

43. The lift boat of claim 39, wherein each pad has about the same surface area as every other pad.

44. The lift boat of claim 43, wherein the pads are buoyant in salt water.

45. The lift boat of claim 39 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

46. The lift boat of claim 39 wherein the pads are buoyant.

47. The lift boat of claim 39 wherein the pads supplement the aggregate buoyancy of the hull when underway.

48. A lift boat, comprising:

a) a hull having a hull periphery, a stern, and a bow with a forward rake portion;

b) a plurality of legs movably attached to the hull, each leg having a top and a bottom;

c) a powered jacking mechanism for elevating and lowering each leg relative to the hull between elevated and lowered positions;

d) a plurality of pads, one pad attached to the bottom of each leg, wherein the pads include port and starboard pads that are positioned near the bow of the hull, each pad having an inner edge portion nearer to the hull centerline and an outer edge portion that extends beyond the hull periphery;

e) recesses in the hull for receiving the pads when the legs are raised to the elevated position, each recess having a forward opening for exposing the pad to the sea as the hull moves in a forward direction and a side opening that enables a portion of the pad to extend laterally beyond the side of the hull on each side of the hull;

f) each forward recess being defined by surfaces of the hull including:

i) a top surface that extends above the pad when the leg and its pad are in the elevated position;

ii) an inclined surface that gradually lowers in elevation as it extends aft, the inclined surface having a higher forward section and a lower aft section;

iii) a surface that extends next to and below the inner edge portion of an elevated pad and a forward hull surface portion that is at about the same elevation as the forward section of the inclined surface.

49. The lift boat of claim 33 further comprising a propeller on the hull for powering the hull.

50. The lift boat of claim 39 further comprising a propeller on the hull for powering the hull.

51. The lift boat of claim 48 further comprising a propeller on the hull for powering the hull.

52. A lift boat comprising:

a) a self-propelled hull having a deck surface, port and starboard sides, bow and stern portions, a hull periphery and a hull bottom, each said port and starboard side

extending generally between the deck and bottom, the bow portion having a rake portion;

b) a plurality of legs movably attached to the hull;

c) each leg having a jacking mechanism for moving the leg upward and downward relative to the hull; and

d) a plurality of pads, one pad attached to each leg, including port and starboard pads next to the hull bow portion and at least one aft pad next to the hull stern portion;

e) a plurality of recesses in the hull for receiving the pads when the lift boat is underway, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, at least two of the pads extending laterally of the deck surface area; and

f) wherein two of the recesses include an opening in one of the sides through which a pad extends beyond the hull periphery during use when the boat is underway and the legs are in the up position.

53. The lift boat of claim 52, wherein each pad has about the same surface area as every other pad.

54. The lift boat of claim 52, wherein the pads are partially recessed into the hull and extend laterally outward from the hull when the boat is underway.

55. The lift boat of claim 54 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

56. The lift boat of claim 54 wherein the pads are buoyant.

57. The lift boat of claim 54 wherein the pads supplement the aggregate buoyancy of the hull when underway.

58. A lift boat comprising:

a) a self-propelled hull having a bow, a stern, and port and starboard side panels, a hull periphery, a hull centerline, and each side panel having a vertically extending opening;

b) a plurality of legs including at least one stern leg next to the stern and two legs next to the bow including a port leg and a starboard leg, each of the legs being movable relative to the hull between "up" and "down" positions and the stern leg being closer to the hull centerline than the port and starboard legs;

c) a plurality of pads, one pad attached to each leg;

d) each leg having a jacking mechanism that powers a leg upward and

downward between "up" and "down" positions;

e) a plurality of recesses in the hull for receiving the pads when the lift boat is underway, wherein one of the pads extends laterally beyond the starboard side panel and hull periphery at a vertically extending opening when the boat is underway, and one of the pads extends laterally beyond the port side and hull periphery at one of the vertically extending openings when the boat is underway; and

f) wherein each of the port and starboard bow recesses has front openings that communicate with the side openings and a part of the hull extends over a part of each port and starboard pad.

59. The lift boat of claim 58, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is at least 30% of the surface area of the deck of the lift boat.

60. The lift boat of claim 58, wherein each pad has about the same surface area as every other pad.

61. The lift boat of claim 58, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is large enough such that the pads exert pressure of less than 7 p.s.i. on the sea floor during use.

62. The lift boat of claim 58, wherein the pads are buoyant in salt water.

63. The lift boat of claim 58 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

64. The lift boat of claim 58 wherein the pads are buoyant.

65. The lift boat of claim 58 wherein the pads supplement the aggregate buoyancy of the hull when underway.

66. The lift boat of claim 52 further comprising a propeller on the hull for powering the hull.

67. The lift boat of claim 58 further comprising a propeller on the hull for powering the hull.

68. A lift boat comprising:

a) a hull having a deck surface, port and starboard sides, bow and stern portions, a hull periphery, a hull centerline and a hull bottom, each said port and starboard side extending generally between the deck and bottom, the bow portion having a rake portion;

b) a plurality of legs movably attached to the hull;

c) each leg having a jacking mechanism for moving the leg upward and downward relative to the hull; and

d) a plurality of pads, one pad attached to each leg, including a pair of forward leg pads and an aft pad leg next to the vessel stern portion and closer to the hull centerline than the forward legs;

e) a plurality of recesses in the hull for receiving the pads when the lift boat is underway, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, at least two of the pads extending laterally of the deck surface area;

f) wherein two of the recesses include an opening in one of the sides through which a pad extends beyond the hull periphery during use when the boat is underway and the legs are in the up position; and

g) a propulsion system for self-propelling the hull, including a pair of propulsion units positioned on opposite sides of the aft leg pad.

69. The lift boat of claim 68, wherein each pad has about the same surface area as every other pad.

70. The lift boat of claim 68, wherein the pads are partially recessed into the hull and extend laterally outward from the hull when the boat is underway.

71. The lift boat of claim 70 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

72. The lift boat of claim 70 wherein the pads are buoyant.

73. The lift boat of claim 70 wherein the pads supplement the aggregate buoyancy of the hull when underway.

74. A lift boat comprising:

a) a self-propelled hull having a bow, a stern, and port and starboard side panels, a hull periphery, and each side panel having a vertically extending opening;

b) a plurality of legs including one leg positioned next to the stern and two legs positioned next to the bow, including a port leg and a starboard leg, each of the legs being movable relative to the hull between "up" and "down" positions;

c) a plurality of pads, one pad attached to each leg;

d) each leg having a jacking mechanism that powers a leg upward and downward between "up" and "down" positions;

e) a plurality of recesses in the hull for receiving the pads when the lift boat is underway, wherein one of the pads extends laterally beyond the starboard side panel and hull periphery at a vertically extending opening when the boat is underway, one of the pads extends laterally beyond the port side and hull periphery at one of the vertically extending openings when the boat is underway, and the pad attached to the stern leg being a stern pad that extends behind the hull periphery;

f) wherein each of the port and starboard bow recesses has front openings that communicate with the side openings and a part of the hull extends over a part of each port and starboard pad; and

g) the hull having one or more propulsion units for self-propelling the hull, each positioned in front of at least part of the stern pad.

75. The lift boat of claim 74, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is at least 30% of the surface area of the deck of the lift boat.

76. The lift boat of claim 74, wherein each pad has about the same surface area as every other pad.

77. The lift boat of claim 74, wherein the lift boat has a deck surface area which is the surface area of the top of the hull as viewed in plan, the pads have a total bottom surface area which is the sum of the bottom surface area of all of the pads, and wherein the total bottom surface area of the pads is large enough such that the pads exert pressure of less than 7 p.s.i. on the sea floor during use.

78. The lift boat of claim 74, wherein each pad has about the same surface area as every other pad.

79. The lift boat of claim 78, wherein the pads are buoyant in salt water.

80. The lift boat of claim 74 wherein at least some of the pads are positioned at least partially below the waterline when the pads are in a fully up position.

81. The lift boat of claim 74 wherein the pads are buoyant.

82. The lift boat of claim 74 wherein the pads supplement the aggregate buoyancy of the hull when underway.

83. The lift boat of claim 68 further comprising a propeller on the hull for powering the hull.

84. The lift boat of claim 74 further comprising a propeller on the hull for powering the hull.

85. The lift boat of claim 73 further comprising a propeller on the hull for powering the hull.